REMARKS

This is in full and timely response to the above-identified Office Action. The above listing of the claims supersedes any previous listing. Favorable reexamination and reconsideration are respectfully requested in view of the preceding amendments and the following remarks.

Rejections under 35 USC § 102

In this response, claim 1 has been amended via the inclusion of at least the subject matter of claim 2, and claim 2 has been cancelled. The amendments to claim 1 actually set forth more specific examples of the polymethacrylate and polyalkylacrylate generally recited in claim 2, and therefore are such to render the claim more specific with respect to the disclosure of the prior art.

Support for these limitations can be found in the specification - see paragraph [0076] of the publication of the instant application - 20060014874 and page 15, lines 16-26 of the originally filed specification.

The amendments to claim 1 therefore do not introduce any new matter and do not raise any new issues. The amendments to claim 1 are based on those set forth in claim 2 and are such as to narrow the scope of the claim over that which would have been presented if only the limitations of claim 2 were introduced. Entry of these amendments is respectfully requested in that they place the application in condition for allowance.

It is respectfully submitted that the amendments to claim 1 differentiate over the subject matter contained in US 6,150,447 to

Cusack et al. (hereinafter Cusack). That is to say, inasmuch as the subject matter of claim 2 is not rejected as being anticipated by Cusack, the inclusion of its subject matter is such as to overcome the anticipation rejection of claims 1, 6 and 7 under 35 USC § 102(b).

Rejections under 35 USC § 103

The rejection of claims 1, 6 and 7 under 35 USC § 103(a) as being unpatentable over Cusack further in view of US 5,744,525 to Harvey et al. (hereinafter Harvey) is respectfully traversed.

The claimed subject matter is directed to a fire retardant VC-based resin composition which includes a specified volume of (i) an anti-smoke agent comprising hydroxy zinc stannate or molybdenum compounds; (ii) at least one kind of aluminum- and magnesium-metal hydroxide and zeolite; and (iii) a processing aid comprising a specified volume of polyalkylmethacrylate or polyalkylacrylate (i.e., at least one kind of processing aid comprising methyl methacrylate, poly(butyl methacrylate), poly(ethyl acrylate), poly(butyl acrylate), poly(2-ethylhexyl acrylate), and those copolymers), as at least an essential component.

As a result, the claimed resin composition obviates inferior dispersion of additives by including the processing aid of the specified composition in the composition thereof (see page 15, line 12 to page 16, line 7 of the specification of the present invention).

That is to say, in the event that the magnesium-metal hydroxide is not first coated with hydroxy zinc stannate which is another structural component, and the hydroxy zinc stannate is

merely added to the magnesium-metal hydroxide and mixed together, the dispersion deteriorates. However, even in this case, the resin composition of the present invention improves the dispersion by adding the above-mentioned compound as the processing aid.

In connection with this facet of the clamed subject matter it is submitted that Cusack contains no description or suggestion to include the processing aid in the fire retardant VC-based resin composition. This is acknowledged in the rejection which turns to Harvey to rectify the admitted shortcoming.

The rejection is such as to advance that because acrylate processing agents are well known and conventionally incorporated into PVC compositions, that it would be, for no other reason, obvious to introduce the same into the formulation of Cusack. All that Harvey et al. is cited is to show that this type of processing aid is well known. However, the bulk of the teachings of Harvey are ignored.

That is to say, Harvey et al. discloses a composition of heat-stable vinylchloride (VC) by including a calboxylic acid of a divalent metal or an organic compound of phenol and an organic compound of a specific composition in homopolymers and/or copolymers of VC.

In the Harvey et al. reference, an example of the formulation when the composition of the VC is sheet-processed is shown (composition A of Examples 1 to 3), and in the composition, the "co-polymer of methyl methacrylate, butadiene and styrene" is used as an "impact modifier". However, the resin composition shown as the example in Harvey et al. differs from the resin composition of the present invention in the following respects.

First, the composition as the compound of the resin composition used in Harvey et al. is the specific co-polymer including the methyl methacrylate (i.e., methylmethacrylate butadiene and stylene copolymer), and differs from any of the processing aid (poly(methyl methacrylate), poly(butyl methacrylate), poly(ethyl acrylate), poly(butyl acrylate), poly(2-ethylhexyl acrylate), and those copolymers), used in the claimed invention.

Second, the co-polymer used in Harvey et al. is disclosed as an "impact modifier", not a "processing aid", and the function (capability) of the co-polymer differs from that of the processing aid. Harvey therefore is submitted as not supporting the support the well known conventional position taken in this rejection, and is such as to introduce a dilemma which requires resolution.

Third, in Harvey "paraloid KX 175™ is added as the "processing aid" in addition to the "impact modifier". As shown in the appended reference, the "paraloid KX 175 is the "co-polymer of methyl methacrylate, butadiene, and styrene", and therefore is different in terms of composition from any of the poly(methyl methacrylate), poly(butyl methacrylate), poly(ethyl acrylate), poly(butyl acrylate), and poly(2-ethylhexyl acrylate) used as the "processing aid" in the resin composition of the present invention.

On the other hand, the "processing aid" in the resin composition of the disclosed invention is a methyl methacrylate copolymer commercially available under a trade name "K-120ND" made by Rohm & Haas Co. which is disclosed, for example, in lines 5 to 6 of the page 22 of the specification of the present invention (paragraph [0118] of the above mentioned Patent Publication

20060014874).

Further, as shown in the appended reference, the composition of the "K-120ND" is "(MMA-EA copolymer), i.e., the copolymer of the methyl methacrylate and ethyl acrylate".

Thus, in Harvey, the compound of at least one kind of poly(methyl methacrylate), poly(butyl methacrylate), poly(ethyl acrylate), poly(butyl acrylate), and poly(2-ethylhexyl acrylate), and those copolymers used in the claimed invention as the "processing aid", are not used. Also, in Harvey, there is no description or suggestion the effect of the present invention wherein the dispersion of the compound of each material improves when the above-mentioned compound is added as the "processing aid".

Therefore, not only is there no motivation to consider the use of the teachings which can be gleaned from Harvey in the connection with the disclosure of Cusack, the disclosure of Harvey would not lead to the conclusion reached in this rejection which can only be concluded to be based on an improper "its known so its obvious" position.

Appended reference

"HANDBOOK OF POLYVINYL CHLORIDE FORMULATING"

Excerpt(s)

※ "Paraloid K175" used as a process aid in an embodiment of Harvey is the co-polymer of MMA-BA-ST as described in the first to second lines from the bottom of the page 664 (TABLE 25.25) of the attached reference.

※ "K-120ND" used as the process aid in embodiments 1 to 13 of the instant invention is the co-polymer of MMA-EA as described in the sixth line from the bottom of the page 663 (TABLE 25.24) of the appended reference.

Rejoinder of withdrawn claims

In light of the above discussed amendments to claim 1 which overcomes both the anticipation and obviousness rejections it is respectfully requested that the claims which have been withdrawn from consideration be allowed along with the claims 1, 6 and 7.

Conclusion

It is respectfully submitted that the claims as they have been amended and newly presented are allowable over the art which has been applied in this Office Action. Favorable reconsideration and allowance of this application are courteously solicited.

Favorable reconsideration and allowance of this application are courteously solicited.

Respectfully submitted,

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HANDBOOK OF POLYVINYL CHLORIDE FORMULATING

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TABLE 25.24 Composition and Physical Properties of Typical Processing Aids

Manufacturer	Trade name	Grade	Composition[a]	Bulk density, g/cc	Specific gravity, 25/25°C	n_D^{25}
Amoco	Amoflo	—	Alpha-MS	0.55	1.07	1.61[b]
Elf Atochem	Plastiflo[c]	A-01	ST-AN	0.2–0.3	1.07	1.57
Elf Atochem	Metablen	P-501	MMA-EA	0.34	1.18	—
Elf Atochem	Metablen	P-530	MMA-BA	—	—	—
Elf Atochem	Metablen	P-550	MMA-BA	0.32	1.08	—
Elf Atochem	Metablen	P-551	MMA-BA	0.32	1.07	—
Elf Atochem	Metablen	P-570	MMA-DA	0.40	1.10	—
Bärlocher	Bärorapid	3F	MMA-BMA	0.40	1.10	—
Bärlocher	Bärorapid	10	MMA-BMA	0.40	1.10	—
BASF	Vinuran	3833	MMA	0.47	1.16	—
Hüls	Vestiform	R210	PVC-*g*-BA	—	—	—
Hüls	Vestiform	R315	PVC-*g*-BA	—	—	—
Hüls	Vestiform	R420	PVC-*g*-BA	—	—	—
ICI	Diakon	APA 1	MMA-EA	0.4	1.18[d]	1.49[d]
ICI	Diakon	APA 3	MMA-EA	0.4	1.18[d]	1.49[d]
ICI	Diakon	APA 5	MMA-EA	0.4	1.18[d]	1.49[d]
Kanegafuchi	Kane Ace	PA-20	MMA-EA-BA	0.35	—	—
Kanegafuchi	Kane Ace	PA-50	—	0.62	—	—
Kureha	Paraloid[e]	—	—	—	—	—
Mitsubishi	Metablen[f]	—	—	—	—	—
Protex	Modarez	APVC8	MMA-EA	—	—	—
Polysar	—	P-210D	MMA-ST	0.63	1.13	1.530
Rohm and Haas	Paraloid	K-120N	MMA-EA	0.30	1.18	1.485
Rohm and Haas	Paraloid	K-120ND	MMA-EA	0.30	1.18	1.48
Rohm and Haas	Paraloid	K-130	MMA-EA	0.30	1.18	1.48
Rohm and Haas	Paraloid	K-125	MMA-EA-BA	0.30	1.18	1.48
Rohm and Haas	Paraloid	K-147	MMA-EA	0.44	1.19	1.48
Rohm and Haas	Paraloid	KM-318F[g]	MMA-EA	0.30	1.05	1.48
Wacker Chemicals (USA)	—	SC-5	—	—	—	—

[a]Composition code: AN—acrylonitrile, BA—butyl acrylate, BMA—butyl methacrylate, DA—decyl acrylate, EA—ethyl acrylate, MMA—methyl methacrylate, MS—methyl-styrene, ST—styrene.

[b]20°C.

[c]Formerly Celukavit N.

[d]Temperature not specified.

[e]See Rohm and Haas for product listings.

[f]See Elf Atochem for product listings.

[g]Impact modified processing aid designed for rigid foam.

TABLE 25.25 Composition and Physical Properties of Lubricating Processing Aids

Manufacturer	Trade name	Grade	Composition[a]	Bulk density (loose), g/cc	Specific gravity, 25/25°C	n_D^{25}
Elf Atochem	Metablen	P-700	MMA-BA-ST	0.30	1.12	—
Elf Atochem	Metablen	P-710	MMA-BA-ST	—	—	—
Elf Atochem	Metablen	L-1000[b]	MMA-BA-BMA	0.40	1.08	—
Ciba-Geigy	Ingamod	D-17-35	—	—	—	—
Hüls	Vestiform	P-420	—	—	—	—
Kanegafuchi	Kane Ace	PA-100	MMA-BA-ST	—	—	—
Kureha	Paraloid	K-175	MMA-BA-ST	23.1[c]	1.05	1.519
Rohm and Haas	Paraloid	K-175	MMA-BA-ST	23.1[c]	1.05	1.519

[a]Composition code: BA—butyl acrylate, BMA-butyl methacrylate, MMA—methyl methacrylate, ST—styrene.
[b]Generally considered a polymeric lubricant rather than a processing aid.
[c]lb/ft³.

TABLE 25.26 Representative Suppliers for Processing Aids

	United States
Amoco Performance Products	38-C Grove St., Ridgefield, CT 06877
Elf Atochem North America	Three Parkway, Philadelphia, PA 19102
Ciba-Geigy Corp.	Seven Skyline Drive, Hawthorne, NY 10532
Degusse Corp.	Box 606, Theodore, AL 36590
General Electric Co.	5th and Avery Sts., Parkersburg, WV 26102
Henkel Corp.	300 Brookside Ave., Ambler, PA 19002
Hüls America	80 Centennial Ave., Piscataway, NJ 08855
ICI Americas	Concord Pike and New Murphy Rd., Wilmington, DE 19897
Kaneka Texas Corp.	17 S. Briar Hollow, Houston, TX 77027
Kureha Chemical Industry Co.	420 Lexington Ave., Suite 2144, New York, NY 10017
Miles, Inc., Polysar Rubber Division	2603 W. Market St., Akron, OH 44313
Protex	10500 47th St. North, Clearwater, FL 34622
Rohm and Haas Co.	Independence Mall W., Philadelphia, PA 19105
Wacker Chemicals (USA), Inc.	50 Locust Ave., New Canaan, CT 06840
	Europe
BASF	D-6700 Ludwigshafen, Germany
C.W. München Otto Bärlocher	Riesstrasse 16, D-8000 München 50, Germany
Ciba-Geigy Marienberg GmbH	Lautertal/Odenwald, Postfach 1253, D-6140 Bensheim, Germany
General Electric Plastics	P.O. Box 8122, Cyprusweg 2, 1044 AA Amsterdam, Netherlands
Hüls	Postfach 1320, D-4370 Marl, Germany
ICI Plastics Division	P.O. Box 6, Welwyn Garden City AL7 1HD, England
Kaneka Belgium	Wetsraat 34, B-1040 Brussels, Belgium
Kureha Chemical GmbH	Liesegangstrasse 17A, D-4000 Dusseldorf, Germany
Metablen Co.	La Defense 5, Cedex 54, 92062 Paris, France
Protex	B.P. 177, 6 Rue Barbes, 92305 Levallois, France
Rohm and Haas Co.	La Tour de Lyon, 185 Rue de Bercy, 75579 Paris-Cedex, France
	Japan
Amoco Performance Products, Japan	Tonichi Bldg., 2-31 Ropponi 6-chome, Minatoku, Tokyo 106
Kanegafuchi	2-4, 3-chome, Nakanoshima, Kita-ku, Osaka
Kureha Chemical Industry Co.	9-11, 1-chome, Nihonbashi Horidome-Cho, Chuo Ku, Tokyo 103
	Hong Kong
General Electric Co.	15/F Convention Center, No. 1 Harbor Road, Wanchai

TABLE 25.27 Processing Aids with Similar Performance Properties

Rohm and Haas	Paraloid	K-120N	K-120ND	K-120NL[a]	K-125	K-175
Rohm and Haas	Paraloid		K-130			
Elf Atochem	Metablen	P-501	P-550		P-551	P-710
Bärlocher	Bärorapid	3P			10	
BASF	Vinuran	38				
Hüls	Vestiform	R210	R315		R420	
ICI	Diakon		APA 1	APA 3		
Kanegafuchi	Kane Ace		PA-20	PA-50	PA-50	PA-100
Protex	Modarez	APVC 8				

[a]Available in Europe only.

Serial No. 10/533,814

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being facsimile transmitted to the U.S. Patent and Trademark Office (Fax No. 571-273-8300) on March 11, 2009.

Manabu Kanesaka